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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,410	03/25/2004	Christian Viskov	03806.0586-00000	5338

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EXAMINER	
MOSS, KERI A	

ART UNIT	PAPER NUMBER
1743	

MAIL DATE	DELIVERY MODE
07/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/808,410	VISKOV ET AL.	
	Examiner	Art Unit	
	Keri A. Moss	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-34 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-34 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 11/21/05.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in the European Patent Office on March 24, 2004. It is noted, however, that applicant has not filed a certified copy of the EPO 04 290789.9 application as required by 35 U.S.C. 119(b).

Specification

2. The disclosure is objected to because of the following informalities: the specification contains no brief description of the drawings.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims **1-12** are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. It is unclear what applicants intend to claim because applicants have not outlined the steps of the method and, in addition, claim 1 does not contain the formal preamble language, such as "comprising" or "consisting of." Is the analysis of a complex mixture of oligosaccharides a separate step from using a reversed phase column?

In claim **4**, it is unclear whether applicants are claiming the sample is analyzed 1) without using a C8 or C18 column or 2) without pretreatment before adding the sample to the column.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims **1, 13, 17, 20-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lopez (USP 4,981,955) and further in view of Ito et al. (Determination of inorganic anions in salt solutions by ion chromatograpy using C18 reversed-phase columns coated with cetyltrimethylammonium, Journal of Chromatography, 598, 237-241 (1992)). Lopez teaches a method of assaying a sample of heparin with low molecular weight (column 1 lines 6-12) comprising depolymerizing the sample (Example 2) then reducing the sample with an alkali metal salt of the borohydride anion (Example 3) then assaying the sample by chromatography (paragraph bridging columns 3 and 4).

Lopez does not teach using CTA-SAX chromatography. Ito teaches a method of separating anions using C18 columns coated with cetyltrimethylammonium (Introduction, page 237). Ito also teaches using mobile phase such as sodium methane sulfonate (p. 238, Sample and mobile phase preparation) and detection at 225 nm (p. 239, Fig. 1). The advantages of using Ito's method include greater chromatographic efficiency and lower price of reversed-phase columns, no need for special equipment, and greater flexibility with regard to choice of columns, eluents, and ion-pair reagents for optimum anion separation. Therefore, it would have been obvious to separate the heparin anions using CTA-SAX chromatography in order to gain the advantages of greater chromatographic efficiency and lower price of reversed-phase columns, no need for special equipment, and greater flexibility with regard to choice.

9. Claims **1-15, 17, 20-26 and 31-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mourier (USP 6,617,316) in view of Lopez, supra, and further in view of Ito, supra. Mourier et al teach method for analyzing heparins comprising depolymerizing a sample with heparinases, and assaying by HPLC (see column 2, lines 30-35 and line 48 and column 3, line 13 and lines 27-28). Further, the oligosaccharides present are modified with a 1,6-anhydro bond and the chromatography is anion exchange (see column 1, line 27 and column 8, lines 1-15).

See Lopez discussed supra.

See Ito discussed supra.

Mourier does not expressly teach reducing the heparin with NaBH4 or an alkali metal salt of borohydride anion. Lopez teaches reducing the sample with an alkali metal salt of the borohydride anion. It would have been obvious to combine Mourier with Lopez in order to gain the advantage of stabilizing the terminal groups. Lopez does not teach using CTA-SAX chromatography. Ito teaches a method of separating anions using C18 columns coated with cetyltrimethylammonium (Introduction, page 273). Ito also teaches using mobile phase such as sodium methane sulfonate (p. 238, Sample and mobile phase preparation) and detection at 225 nm (p. 239, Fig. 1). The advantages of using Ito's method include greater chromatographic efficiency and lower price of reversed-phase columns, no need for special equipment, and greater flexibility with regard to choice of columns, eluents, and ion-pair reagents for optimum anion separation. Therefore, it would have been obvious to separate the heparin anions using CTA-SAX chromatography in order to gain the advantages of greater chromatographic

efficiency and lower price of reversed-phase columns, no need for special equipment, and greater flexibility with regard to choice.

10. Claim **16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Mourier, Lopez and Ito as applied to claims 1-15 above, and further in view of Sasisekharan (USP 5,569,600). See Mourier, Lopez and Ito, discussed supra. While Mourier teaches using heparinases for depolymerization, Mourier does not teach a mixture of heparinases. Sasisekharan teaches a mixture of heparinases, including I, II and III (column 4 lines 30-37). Using a mixture of heparinases provides a solution containing a mixture of variably-sized heparins. This is especially useful in a system that selectively separates each depolymerized heparin molecule from others because it enables an analysis process that involves fewer steps. Therefore, it would have been obvious for one of ordinary skill in the art to modify the disclosures of Mourier, Lopez and Ito with a mixture of heparinases in order to have an analysis of heparin involving fewer process steps.

11. Claims **18-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mourier, Lopez and Ito as applied to claims 1-15 above, and further in view of Debrie (USP 5,389,618). See Mourier, Lopez and Ito, discussed supra. Neither Mourier, Lopez or Ito using a sample of enoxaparin. Debrie teaches using a sample of enoxaparin (paragraph bridging columns 6-7). Enoxaparin is a readily available form of heparin and therefore it would have been obvious to one of ordinary skill in the art to

use Enoxaparin to save time and costs by using a readily available form of heparin such as enoxaparin for analysis.

12. Claims **27-30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mourier, Lopez and Ito as applied to claims 1-15 above, and further in view of Bergendal (USP 5,039,529). See Mourier, Lopez and Ito, discussed supra. Neither Mourier, Lopez or Ito teach using acetylated sugars and detection of components. Bergendal teaches acetylated sugars and detection of components (column 2 lines 35-37; Fig. 1). Bergendal discloses the possibility of detecting acetylated sugar derivatives of heparin. Acetylated sugar derivatives are found to inhibit cancer growth (column 1 lines 23-27). Therefore, it would have been obvious to one of ordinary skill in the art to combine the method disclosed by Mourier, Lopez and Ito that selectively separates and detects fractionated heparin derivatives with the disclosures of Bergendal in order to separate acetylated sugar derivatives for pharmaceutical application of inhibiting cancer growth.

Double Patenting

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims **13-16** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim **24** of copending Application No. 10/808791. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method of the instant claims includes a more detailed listing of heparins to assay.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

15. Claims **13-16** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims **1-12** of copending Application No. 10/665872. Although the conflicting claims are not identical, they are not patentably distinct from each other because the only difference is that reducing the depolymerized sample is optional in application no. 10/665872.

This is a provisional obviousness-type double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keri A. Moss whose telephone number is 571-272-8267. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Keri A. Moss
Examiner
Art Unit 1743